

# MICROSCANNER<sup>TM</sup> MICROSCANNER<sup>TM</sup> PRO

## **User Guide** **ENGLISH**



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## The Keypad



When turned on, MICROSCANNER will flash the LCD power-up test and then resume the test mode that was last executed. MICROSCANNER will turn off automatically when no cable is detected and no key has been used for 10 minutes.



Press ▲ ▼ to quickly change pairs or adjust values. The ▲ ▼ keys are only active if the indicators are shown on the display

## Operating Mode



Press **MODE** to select the desired test. The available modes are: **WIREMAP - OFFICE IDENTIFIER - LENGTH - TONER**

## Calibration Mode

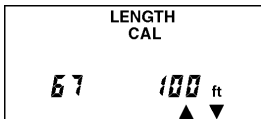


Turn the MICROSCANNER **OFF**, then hold the **MODE** key down while pressing the **ON** key to start 'Calibrate' mode. Use MICROSCANNER to calibrate cable lengths of more than 50 feet (15 meters) and up to 1500 feet (457 meters.)

## Setting the NVP percentage

Once in Calibrate Mode, the default NVP (Nominal Velocity of Propagation) will be displayed followed by the overall cable length. The cable length is measured with the currently stored NVP.

NVP is the measure of how fast a signal travels down a cable compared to the speed of light. The result will be represented as a percentage of the speed of light. For an accurate length test, the NVP must be set correctly.



If you know a cable's NVP, change the displayed numbers using the ▲▼ keys until the appropriate NVP is displayed. The cable length will automatically adjust to the new NVP.

If you know a cable's length, change the shown NVP using the ▲▼ keys until the appropriate length is displayed. The NVP can be adjusted in 1% increments, and the length changes accordingly.

Cables used for calibration must be at least 50 feet (15 meters) long. Cable lengths of less than 50 feet will display **FAULT**.

## Changing Display from Meters to Feet

During Calibration you will be able to switch the displayed length from meters to feet by simply pressing the **MODE** key.

Press the **ON/OFF** key once the desired cable length or NVP is displayed to terminate 'Calibrate' mode and store the new calibration factor. MICROSCANNER will use it for future length measurements until another calibration is performed.

## Battery

MICROSCANNER requires a 9 Volt Alkaline battery. The Battery icon is displayed on the screen when MICROSCANNER detects a low battery condition.



Using MICROSCANNER with a low battery may effect the test accuracy.

If MICROSCANNER is stored for more than one month, the battery should be removed.

**Note:** MICROSCANNER will not function properly with a 9 Volt Carbon Battery.

## High Voltage Protection

MICROSCANNER is designed to withstand input voltage conditions that arise from normal telephony applications such as 48 VDC at less than 80 ma or 24 VAC used to power many keysets. Tests cannot be performed when hazard conditions exist on the inputs.

## Technical Support

If you have technical questions, you may contact Microtest Technical Support by phone, fax or e-mail.

### North America, Latin America, and Asia Pacific:

1-800-NET-FIXR (1-800-638-3497) (U.S. and Canada only)

1-800-419-8991 (FAX) (U.S. and Canada only)

1-602-952-6483 (Voice)

1-602-952-6494 (FAX)

### Greater Europe, Middle East, and Africa:

+44 1 293 456 025, +44 1 293 456 008 (FAX)

Before calling Technical Support, please have your Hardware and Software Version numbers available.

For new product information: World Wide Web page at <http://www.microtest.com>

## Product Versions



Turn the MICROSCANNER **OFF**, then hold the ▲ and **MODE** keys down while pressing the **ON** key to display your hardware and software versions.

Hardware

2000 3000

Software

# MICROSCANNER™ Tests

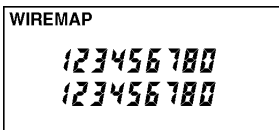
## Wiremap

The **Wiremap** function tests twisted-pair cabling for proper wiring. Your cabling configuration is checked for shield continuity, opens, shorts, crossed pairs, split pairs, and reversed pairs. Test Results are displayed as a numeric representation, where the upper line of fixed digits shows the detected wires at the MICROSCANNER jack, and the lower line of digits indicates the actual wiring. This function requires the use of the Wiremap Adapter at the far end.

1. Connect the cable to be tested to the **MAIN** jack (identified on the unit right above the modular 8 jack).
2. To display the Wiremap screen, press the **MODE** key until the word **WIREFMAP** appears on the screen.

Following are examples where MICROSCANNER did not detect any faults.

**Full Wiremap with intact shield shown as a ZERO '0' on the right (4 pair, 8 wires)**





**10BaseT Cable  
unshielded  
(2 pair, 4 wires)**

WIREMAP	
123	6
123	6

**Token Ring  
shielded  
(2 pair, 4 wires)**

WIREMAP	
3456	0
3456	0

Below are examples of wiring faults. The **FAULT** indicator will be displayed and the numerical wire indicators will blink.

**Reversed:  
Pair 3 - 6**

WIREMAP	FAULT
12345678	
12645378	

**Crossed:  
Pairs 4 - 5, 3 - 6**

WIREMAP	FAULT
12345678	
12436578	

**Split Pair**

WIREMAP
SPLIT PAIR
123456780
123456780

**Note:** If a cable is wired correctly, pin-to-pin, but there is a split pair, Wiremap will display **SPLIT PAIR**. For example a wire from the 1 - 2 pair could be twisted with a wire from the 3 - 6 pair.

If the wire does not go to the far end, the numerical indicator for the open will be left blank. The word **Open** will be displayed. Shorted pairs are indicated with a connecting bracket, and the word **Short** will be displayed.

### **Open: Pair 4 - 5**

WIREFMAP	
12345678	Open
123 678	

### **Short: Pair 1 - 2**

WIREFMAP	FAULT
123456780	Short
1 2 3456780	

When the wiring fault includes shorted or swapped non-pair pins (e.g. non-pair pins 1 - 3), the wiremap will display dashes for those numerical wire indicators.

## Patch Cable Wiremap

The **Wiremap** function can also be used to verify patch cables.

1. *Simply plug the two ends of a cable into the two modular 8 jacks (**MAIN** and **LOOP BACK**) on MICROSCANNER.*
2. *To display the Wiremap screen, press the **MODE** key until the word **WIREFMAP** appears on the screen.*

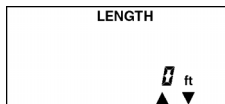
If there are any miswires, the number of the faulty wire will blink.

# Length

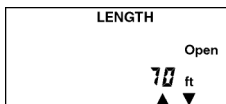
The **Length** function measures the full length of a twisted pair or coaxial cable. Twisted pair: If you are measuring standard pair length, MICROSCANNER will determine whether the cable is open, shorted, or connected to a hub.

1. Connect the cable to be tested to the **MAIN** jack (identified on the unit right above the modular 8 jack).
2. To display the length screen, press the **MODE** key until the word **LENGTH** appears on the screen. The overall cable length will be shown.

## No Cable attached

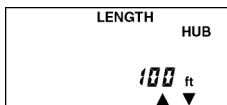


## 70 feet cable

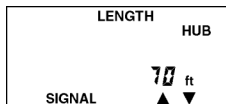


If the far end of a cable is connected to a hub, MICROSCANNER will display **HUB** and the cable length. The cable is considered connected to a hub when the 3 - 6 pair is terminated and either pair 1 - 2 or 4 - 5 is terminated.

## Length to Hub



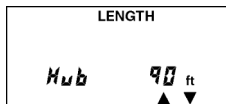
Some early model 100TX only network equipment does not generate link pulses and MICROSCANNER will display **HUB**, the cable length and the word **SIGNAL**.



## Network Link Indicator (MICROSCANNER PRO)

The **Network Link Indicator** allows you to find and identify active network 10/100 hubs and confirm to which hub MICROSCANNER is connected. It will blink the hub's status indicator to assist locating a single channel in a busy wiring closet.

1. Connect the cable to be tested to the **MAIN** jack (identified on the unit right above the modular 8 jack).
2. To display the length screen, press the **MODE** key until the word **LENGTH** appears on the screen. MICROSCANNER displays the word **Hub** followed by the length to the hub.



3. When MICROSCANNER displays **Hub** and the cable length, press the **MODE** key to

*activate the blinking Hub light.*



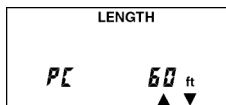
The word **SIGNAL** blinks once every two seconds right below the word **Hub**. Go to the wiring closet to view a light that blinks once every two seconds at the port to which the cable is connected.

MICROSCANNER detects the kind of hub it is connected to: **10**, **100**, or **10/100** alternately will be displayed right after the word **Hub**. The number is followed by the letters **F** and/or **H** as an indication for the hub's full or half duplex capabilities. Descriptions are as follows:

- 10 H    - 10BASE-T
- 10 HF   - 10BASE-T full duplex
- 100 H   - 100BASE-TX
- 100 HF   - 100BASE-T full duplex
- 100 HF4 - 100BASE-T full duplex, 100BASE-T4

MICROSCANNER also Identifies workstations.

1. *Connect the cable to be tested to the **MAIN** jack (identified on the unit right above the modular 8 jack).*
2. *To display the length screen, press the **MODE** key until the word **LENGTH** appears on the screen. MICROSCANNER displays the word **PC** followed by the length to the PC.*



3. When MICROSCANNER displays **PC** and the cable length, press the **MODE** key to activate the blinking Hub light.



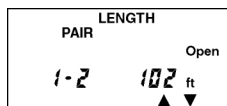
## Pair Length

If ▲▼ are displayed, you will be able to show detailed pair information for each standard conductor pair.

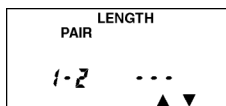
1. Press the ▲ key to display Pair 1 - 2 length.
2. Press the ▲ key again to display the other pair combinations.

The pair length is not measured if the cable is too long, connected to a hub, or a wiremap adapter is used.

### Pair 1 - 2 Length



### Pair 1 - 2 not measurable

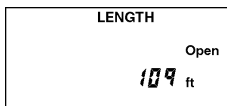


## Coaxial Cabling (MICROSCANNER PRO)

**Note:** This feature is available in the residential version or when using the COAX upgrade kit.

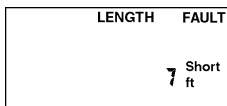
MICROSCANNER measures the full length of a 50 and/or 75Ω (Ohms) coaxial cable, e.g. RG-6 and identifies its termination state.

1. Attach the supplied COAX adapter to the **MAIN** jack (identified on the unit right above the modular 8 jack).
2. Connect the cable to be tested to the **COAX adapter** jack.
3. To display the length screen, press the **MODE** key until the word **LENGTH** appears on the screen. The overall cable length will be shown.



If the coaxial cable is not terminated at the far end, the word **Open** will be displayed.

If a shorted cable is detected, the words **FAULT** and **Short** will be displayed, and the length where the short has been found.



## Office Identifier

The **Office Identifier** function allows you to find the termination of an office cable drop from a wiring closet. By inserting the Office Identifier adapters into RJ-45 office wall outlets, MICROSCANNER can identify office locations at the patch panel.

The Office Identifier plugs are included in the optional Office Identifier accessory kit. They are uniquely numbered. The Wiremap Adapter may also serve as an Office Identifier plug and will be displayed as **OFFICE 4**.

1. *Connect the cable to be tested to the **MAIN** jack (identified on the unit right above the modular 8 jack).*
2. *To display the Office Identifier screen, press the **MODE** key until the word **OFFICE** is displayed on the screen.*
3. *Insert the Office Identifier plugs into wall outlets in the offices you wish to locate.*
4. *At the patch panel, run the Office Identifier function to identify which office is connected to a given port.*

MICROSCANNER will display the number of the Office Identifier found.

### Office 4 found

**OFFICE 4**

### No office found

**OFFICE - - -**



## **Office Identifier** (MICROSCANNER PRO)

The **Office Identifier** function allows you to find the termination of a twisted pair and/or a coax cable drop from a distribution panel. By inserting the Office Identifier adapters into wall outlets, MICROSCANNER can identify office locations at the distribution panel.

The Office Identifier plugs are included in the optional Office Identifier accessory kit. They are uniquely numbered and have RJ-45 connectors on one end and COAX connectors on the other end to allow identification of RJ-45 and/or COAX outlets.

1. *Attach the coax adapter to the **MAIN** jack (identified on the unit right above the modular 8 jack).*
2. *To display the Office Identifier screen, press the **MODE** key until the word **OFFICE** is displayed on the screen.*
3. *Insert the Office Identifier plugs into wall outlets in the offices you wish to locate.*
4. *At the distribution panel, connect the cable to be tested to the coax adapter and run the Office Identifier function to identify which office is connected to a given port.*

MICROSCANNER will display the number of the Office Identifier found.

### **Office 1 found**

**OFFICE 1**

### **No office found**

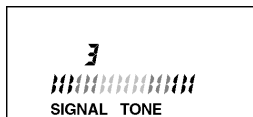
**OFFICE - - -**

## Toner

**Toner** is a cable tracing function that assists in tracking cables hidden in walls, ceilings, floors, or patch panels by generating four distinct multi-tone signals that can be received by a cable tracer. To trace a cable, use Microtest's Cable Tracer II, or any equivalent tracing device, to convert a signal on the cable into an audible tone. To determine the cable path, simply trace along the wire using the audible tone as a guide. The tracer needs to be within one foot of the hidden cable. You may select one of four different tone sequences, displayed as the numbers 1-4 on the LCD.

1. To display the Toner screen, press the **MODE** key until the words **SIGNAL and TONE** are displayed on the screen.
2. To select a different tone sequence press the **▲** or **▼** key.

### Display for time frames with #3 signal tone



To enhance the signal insert a grounding plug into the ground jack located next to the **MAIN** and **LOOPBACK** jacks. A grounding plug is included in the optional Cable Tracer II kit. You may use any grounding cable that has a standard insulated phone tip plug.

# ***Technical Specifications***

## **Dimensions:**

### **MICROSCANNER :**

13.97 cm x 8.25 cm x 2.54 cm (5.5" x 3.25" x 1")

### **Wiremap Adapter:**

7.62 cm x 3.18 cm x 2.11 cm (3" x 1.25" x .83")

### **Office Identifier:**

7.62 cm x 1.60 cm x 1.47 cm (3" x .63" x .58")

### **Coax Adapter:**

7.62 cm x 1.60 cm x 1.47 cm (3" x .63" x .58")

Ground pin receptacle size: 2.03 mm (.08")

## **Weight:**

MICROSCANNER : 171.54 g (.38 lbs)

Wiremap Adapter/Office Identifier: 9.03 g (.02 lbs)

Power Source: 9 V Alkaline battery

## **User Interface:**

Display: Custom LCD

Size: 4.42 cm x 2.15 cm (1.75" x .85")

Keypad: Four momentary contact keys

## **Environmental:**

Operating Temperature: 0° to 50°C (32° to 122°F)

Storage Temperature: -10° to 55°C (14° to 131°F)

Humidity: 10% to 90% non-condensing

## **Applications:**

Shielded and unshielded twisted pair cable, 75 or 50 ohm coaxial cable, 10 or 10/100 BASE-T Networks

**Test Interface:**

Main: Modular 8 connector for length,  
10/100 link identification, wiremap,  
office identifier/room identifier, trace  
Loopback: Modular 8 connector for patch cable  
wiremap

**Calibration:** User selectable NVP

NVP calculation based on known cable length

Minimum length: 15 meters (50 feet)

**Length:**

Maximum length: 450 meters (1500 feet)

**Office Identifier:**

Maximum length: 150 meters (500 feet)